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EXAMINER	
THANGAVELU, KANDASAMY	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/901,188	INOKO ET AL.	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/9/01 and 11/16/0*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-39 of the application have been examined.

Foreign Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application 2000-339716 filed in Japan on October 2, 2000. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. Acknowledgment is made of the information disclosure statements filed on July 9, 2001 and November 16, 2001 with abstracts of Japanese patents. The abstracts have been considered.

Drawings

4. The drawings submitted on July 9, 2001 are accepted.

Specification

5. The disclosure is objected to because of the following informalities:

Specification Page 1, Line 11, "ofthePLCsystembeforethePLCsystemisactuallyconstructed" is not understood.

Specification Page 3, Lines 6-7, "systemprogramdevelopmentsupporttoolforcreatingaPLCsystem" and "programcomprisinginstructionwordsintowhichacreatedladder" are not understood.

Specification Page 3, Line 23, "PLCsystemconstructionsupporttool, thetotalvaluesofcurrent" is not understood.

Specification Page 4, Line 23, "asecondscreenbeingplacedadjacent to thefirst screen" is not understood.

Specification Page 6, Lines 9-10, "totheseends, accordingtoafourthaspectoftheinvention" and "there is providedaPLCsystemprogramdevelopmentsupporttool" are not understood."

Abstract, Line 6, "numericvaluesareupdated. Thedispaly31containsachracter" is not understood.

Abstract, Line 8, "correspondingrowandthenumericvalueofthewidth" is not understood.

Claims Page 28, Line 9, "anddisplayedon" is not understood.

Claims Page 29, Line 19, "thefirstscreenisreadfromtheseconddatafileandisdisplayed" is not understood.

Claims Page 29, Line 22, "ThePLCsystemconstructionsupporttoolasclaimed" is not understood.

Claims Page 30, Line 18, "specificunitisselcetedfromamongthevariousunitsdisplayed" is not understood.

Claims Page 32, Line 8, "wouldactuallybedisposedinthePLCsystem" is not understood.

Claims Page 32, Line 20, "atleastoneofcurrentconsumtion, voltageconsumption" is not understood.

The specification, claims and the abstract have been prepared to align the margins at the right end using variable spacing between words in the lines. This has resulted in no spacing between words on several lines on several pages of the specification, claims and the abstract. The Examiner found it difficult to read the lines and understand what was meant. The specification could cause numerous errors when printed, if the application is allowed. Therefore, the Examiner directs the Applicants to submit substitute specification, including claims and abstract ***with proper spacing between words*** and without aligning the right margin, for further consideration of the application.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-

> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

7. Claims 1-2, 6-9, 11 and 16-17 are rejected under 35 U.S.C. § 102(e) as being anticipated by **Coburn et al.** (U.S. Patent 6,618,856).

7.1 **Coburn et al.** teaches simulation method and apparatus for use in enterprise controls. Specifically as per claim 1, **Coburn et al.** teaches Programmable Logic Controller ("PLC") system construction support tool for simulating a selection of units and a combination thereof on a screen before a PLC system is actually constructed (CL2, L56-63; CL3, L8-14; CL10, L32-57; Fig. 4, Item 430; Fig. 7); the PLC system construction support tool comprising:

a first screen for displaying a list of various units which can be selected for constructing a PLC system (Fig. 7, Item 710; CL16, L39-40; CL110, L15-25); and

a second screen for displaying the units selected from the first screen in the same configuration as the units would actually be disposed in the PLC system, the second screen being disposed adjacent to the first screen (Fig. 7, Item 720; Fig. 8; CL110, L26-33).

Per Claim 2: **Coburn et al.** teaches that the second screen displays information about the types of the units displayed on the second screen (Fig. 7, Item 720; Fig. 8).

Per Claim 6: **Coburn et al.** teaches that a display mode switch unit for switching the second screen between a first display mode for displaying schematic front patterns of the units (CL3, L8-14; CL6, L21-29; CL11, L12-16; Fig. 81, Item 8507, CL21, L48-50); and

a second display mode for displaying the units as box patterns and for displaying assigned relay numbers of the units in association with the box pattern of the selected unit (CL34, L66 to CL35, L17; CL3, L36 to CL4, L2; CL4, L7-10; Fig. 107; CL58, L41-51).

Per Claim 7: **Coburn et al.** teaches a first data file storing information for displaying the units displayed on the first screen on the second screen in the first display mode (CL41, L8-16; Fig. 90, Item 9810; CL41, L35-37; CL103, L16-17); and

a second data file storing the assigned relay numbers of the units displayed on the first screen (CL10, L39-57; CL3, L36 to CL4, L2; CL4, L7-10; CL41, L8-16; CL41, L35-37; Fig. 107; CL58, L41-51; CL103, L16-17), wherein in the first display mode, the information concerning the unit selected out of the first screen is read from the first data file and the selected unit is displayed as a schematic front pattern (CL3, L8-14; CL6, L21-29; CL11, L12-16; Fig. 81, Item 8507, CL21, L48-50); and wherein in the second display mode, the assigned relay number of the unit selected out of the first screen is read from the second data file and is displayed in a numeric form (CL10, L39-57; CL3, L36 to CL4, L2; CL4, L7-10; CL41, L8-16; CL41, L35-37; Fig. 107; CL58, L41-51; CL103, L16-17).

Per Claim 8: **Coburn et al.** teaches a third screen for entering the assigned relay number of each of the units displayed on the second screen (Fig. 7; Fig. 8; Fig. 60; CL3, L66 to CL4, L2; CL4, L7-10; Fig. 107; CL58, L41-51).

Per Claim 9: **Coburn et al.** teaches a screen switch unit for switching the displayed screen between the third screen and the first screen (CL41, L8-16; Fig. 7; Fig. 8; Fig. 60).

Per Claim 11: **Coburn et al.** teaches a determination unit for determining whether or not a specific unit is selected from among the various units displayed on the first screen (CL41, L8-16; CL16, L26-33; Fig. 7, Item 710; CL92, L66 to CL93, L6); and

a first placement unit for placing the specific unit at a predetermined position on the second screen when the specific unit is selected (CL41, L8-16; Fig. 7, Item 720; CL92, L66 to CL93, L6).

Per Claim 16: **Coburn et al.** teaches a Programmable Logic Controller ("PLC") system program development support tool (CL3, L23-25; CL9, L62-66; CL10, L32-57); comprising:

a PLC program creation tool for creating a ladder program and creating a program converted into instruction commands to operate a PLC system in accordance with the created ladder program (CL3, L66 to CL4, L5; CL10, L32-38; CL18, L40-42; CL89, L64 to CL90, L3); and

a PLC system construction support tool built in the PLC program creation tool for simulating a selection of units and a combination thereof on a screen before the PLC system is

actually constructed (CL2, L56-63; CL3, L8-14; CL10, L32-57; Fig. 4, Item 430; Fig. 7); the PLC system construction support tool comprising:

a first screen for displaying a list of various units that can be selected for constructing a PLC system (Fig. 7, Item 710; CL16, L39-40; CL110, L15-25); and

a second screen for displaying the units selected from the first screen in the same configuration as the units would actually be disposed in the PLC system, the second screen being disposed adjacent to the first screen (Fig. 7, Item 720; Fig. 8; CL110, L26-33).

Per Claim 17: **Coburn et al.** teaches that the second screen displays information about the types of the units displayed on the second screen (Fig. 7, Item 720; Fig. 8).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 3-5, 10 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Coburn et al.** (U.S. Patent 6,618,856) in view of **Moore** (U.S. Patent 6,640,264).

10.1 As per claim 3, **Coburn et al.** teaches the tool of claim 2. **Coburn et al.** teaches that the second screen displays the information in numerical form in an area adjacent to a row of the units on the second screen (Fig. 14, Item 1410, Cycle Time 12, 23; Fig 73, Cycle Time 92.0 Sec).

Coburn et al. does not expressly teach the information comprising total values of at least one of current consumption, voltage consumption, width, and weight of each of the units displayed on the second screen. **Moore** teaches the information comprising total values of at least one of current consumption, voltage consumption, width, and weight of each of the units displayed on the second screen (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included the information comprising total values of at least one of current consumption, voltage

consumption, width, and weight of each of the units displayed on the second screen. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

10.2 As per claim 4, **Coburn et al.** teaches the tool of claim 3. **Coburn et al.** teaches a unit type data file storing PLC system data (CL41, L8-16; CL41, L35-37; CL103, L16-17).

Coburn et al. does not expressly teach storing at least one of the current consumption, the voltage consumption, the width, and the weight of each of the units displayed on the first screen. **Moore** teaches storing at least one of the current consumption, the voltage consumption, the width, and the weight of each of the units displayed on the first screen (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included storing at least one of the current consumption, the voltage consumption, the width, and the weight of each of the units displayed on the first screen. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc. from

electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

Coburn et al. does not expressly teach that whenever a unit is selected from the first screen, at least one of the current consumption, the voltage consumption, the width, and the weight of the selected unit is read from the unit type data file and displayed on the second screen. **Moore** teaches that whenever a unit is selected from the first screen, at least one of the current consumption, the voltage consumption, the width, and the weight of the selected unit is read from the unit type data file and displayed on the second screen (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included that whenever a unit was selected from the first screen, at least one of the current consumption, the voltage consumption, the width, and the weight of the selected unit was read from the unit type data file and displayed on the second screen. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

10.3 As per claim 5, **Coburn et al.** teaches the tool of claim 2. **Coburn et al.** teaches that the second screen displays the units selected from the first screen on a plurality of rows in the same configuration of rows as the units are actually displayed on the first screen (Fig. 7, Item 720; Fig. 8; CL110, L26-33); and displays the information in numerical form in an area adjacent to the corresponding row of the units (Fig. 14, Item 1410, Cycle Time 12, 23; Fig 73, Cycle Time 92.0 Sec).

Coburn et al. does not expressly teach the information comprising total values of at least one of current consumption, voltage consumption, width dimension, and weight of each of the units on the corresponding row displayed on the second screen. **Moore** teaches the information comprising total values of at least one of current consumption, voltage consumption, width dimension, and weight of each of the units on the corresponding row displayed on the second screen (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included the information comprising total values of at least one of current consumption, voltage consumption, width dimension, and weight of each of the units on the corresponding row displayed on the second screen. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc.

from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

10.4 As per claim 10, **Coburn et al.** teaches the tool of claim 6. **Coburn et al.** teaches that in at least one of the first display mode and the second display mode, the second screen displays total values on the second screen in numerical form in an area adjacent to a row of the units on the second screen (Fig. 14, Item 1410, Cycle Time 12, 23; Fig 73, Cycle Time 92.0 Sec).

Coburn et al. does not expressly teach that the second screen displays total values of at least one of current consumption, voltage consumption, width, and weight of the units. **Moore** teaches that the second screen displays total values of at least one of current consumption, voltage consumption, width, and weight of the units (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included the second screen displaying total values of at least one of current consumption, voltage consumption, width, and weight of the units. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

10.4 As per claim 18, **Coburn et al.** teaches the tool of claim 17. **Coburn et al.** teaches that the second screen displays the information in numerical form in an area adjacent to a row of the units on the second screen (Fig. 14, Item 1410, Cycle Time 12, 23; Fig 73, Cycle Time 92.0 Sec).

Coburn et al. does not expressly teach the information comprising at least one of current consumption, voltage consumption, width, and weight of each of the units displayed on the second screen. **Moore** teaches the information comprising at least one of current consumption, voltage consumption, width, and weight of each of the units displayed on the second screen (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included the information comprising at least one of current consumption, voltage consumption, width, and weight of each of the units displayed on the second screen. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

10.5 As per claim 19, **Coburn et al.** teaches the tool of claim 17. **Coburn et al.** teaches that the second screen displays the units selected from the first screen on a plurality of rows in the same configuration of rows as the units are actually displayed on the first screen (Fig. 7, Item 720; Fig. 8; CL110, L26-33); and displays the information in numerical form in an area adjacent to the corresponding row of the units (Fig. 14, Item 1410, Cycle Time 12, 23; Fig 73, Cycle Time 92.0 Sec).

Coburn et al. does not expressly teach the information comprising total values of at least one of current consumption, voltage consumption, width dimension, and weight of each of the units on the corresponding row displayed on the second screen. **Moore** teaches the information comprising total values of at least one of current consumption, voltage consumption, width dimension, and weight of each of the units on the corresponding row displayed on the second screen (CL8, L53-58; CL24, L45-47; CL24, L61-67; CL25, L7-21), because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current, weight etc. from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices (Abstract, L1-12; CL2, L48-53). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Moore** that included the information comprising total values of at least one of current consumption, voltage consumption, width dimension, and weight of each of the units on the corresponding row displayed on the second screen. The artisan would have been motivated because PLC systems often process discrete incremental states representing non discrete intermediate values of voltage, current weight etc.

from electromechanical sensors and use them for logic based control of voltage, current, weight etc. of electromechanical devices.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Coburn et al.** (U.S. Patent 6,618,856) in view of **Takase** (U.S. Patent 6,381,501).

11.1 As per claim 12, **Coburn et al.** teaches the tool of claim 11. **Coburn et al.** does not expressly teach that specific unit is a CPU unit. **Takase** teaches that specific unit is a CPU unit (Fig. 3; CL10, L16-27), because as per **Coburn et al.** present industrial PLC systems are implemented using computer processors, which simulate the parallel operation of the relay-like structures of the PLCs by employing extremely fast processors (CL4, L9-16). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Takase** that included the specific unit being a CPU unit. The artisan would have been motivated because industrial PLC systems would be implemented using computer processors, which simulated the parallel operation of the relay-like structures of the PLCs by employing extremely fast processors.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Coburn et al.** (U.S. Patent 6,618,856) in view of **Kar et al.** (U.S. Patent 6,405,745).

12.1 As per claim 13, **Coburn et al.** teaches the tool of claim 11. **Coburn et al.** does not expressly teach that specific unit is a power supply unit. **Kar et al.** teaches that specific unit is a

power supply unit (Fig. 1; Fig. 4; CL5, L45-50; CL6, L47-53), because all programmable logic controllers are electrically connected to and powered by a power supply unit (CL5, L45-50). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Kar et al.** that included the specific unit being a power supply unit. The artisan would have been motivated because all programmable logic controllers would be electrically connected to and powered by a power supply unit.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Coburn et al.** (U.S. Patent 6,618,856) in view of **Wang** (U.S. Patent 6,401,159).

13.1 As per claim 14, **Coburn et al.** teaches the tool of claim 1. **Coburn et al.** does not expressly teach a second placement unit for automatically displaying a repeater unit at each of the termination of a first row and the beginning of a second row when the units displayed on the second screen are disposed on the first row and the second row. **Wang** teaches a second placement unit for automatically displaying a repeater unit at each of the termination of a first row and the beginning of a second row when the units displayed on the second screen are disposed on the first row and the second row (Abstract, L19-23), because when PLCs are located far apart from each other, the signal repeater can extend the communication network and increase the signal strength on the network (CL7, L7-9). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Wang** that included a second placement unit for automatically displaying a repeater unit at each of the termination of a first row and the beginning of a second row when the

units displayed on the second screen were disposed on the first row and the second row. The artisan would have been motivated because when PLCs were located far apart from each other, the signal repeater could extend the communication network and increase the signal strength on the network.

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Coburn et al.** (U.S. Patent 6,618,856) in view of **Okada** (U.S. Patent 6,184,880).

14.1 As per claim 15, **Coburn et al.** teaches the tool of claim 1. **Coburn et al.** does not expressly teach a third placement unit for automatically displaying an end unit at the termination of a row of the units displayed on the second screen. **Okada** teaches a third placement unit for automatically displaying an end unit at the termination of a row of the units displayed on the second screen (CL7, L24-29), because the end unit instructs the tool to stop execution of the construction of the PLC configuration (CL7, L27-29). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the tool of **Coburn et al.** with the tool of **Okada** that included a third placement unit for automatically displaying an end unit at the termination of a row of the units displayed on the second screen. The artisan would have been motivated because the end unit would instruct the tool to stop execution of the construction of the PLC configuration.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on 571-272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
January 31, 2005

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